biddle
CLIMATE SOLUTIONS

Excellence in climate solutions

Product range overview

Biddle bv

Biddle develops, manufactures and sells highly effective equipment for climate separation, heating, cooling and ventilation.

Experience

For the last 50 years Biddle developed and strengthened an image of excellence in the field of air diffusion. Nowadays well established as the technological leader for climate control, Biddle keeps going on with its strategy of constant innovation: its strong Research and Development department, thanks to its agreements with the biggest labs in Europe, patents constantly new technologies which differentiate Biddle's products from standard ones.

High quality products... and service

Custom made products, consulting approach, on site expertise... Biddle really gets involved in its customers' project. Our aim is rather to provide solutions then just to provide products. Through professional consultancy, support and advice we are able to offer solutions to retail, offices and industries. With a different philosophy than other suppliers in this field, Biddle has opened new ways to provide optimally matched solutions for all types of climates, without any concession to quality. Main issues in our solutions are comfort and (energy) effectiveness. By choosing an investment in Biddle equipment our customers start saving energy from day one while profiting from the optimum inside climate.

Internationally available through distributors

Biddle products find their way to more than 25 countries via factories and sales offices in Great Britain and the Netherlands, and via Biddle sales offices in Germany, France, Belgium and Canada. Other European countries are covered by a network of skilled distributors. This strategy has strengthened the positions of Biddle as innovation leader and reliable supplier in the climate industry all around the world. For the contact in your country have a look at our website www.biddle.info.

Environmental friendly

Concerned by protection of the environment, Biddle uses environment-friendly materials and components with a long life whenever possible. Moreover all its products include technologies allowing their user to realize important energy savings. Since several years Biddle is ISO 14001 certified.

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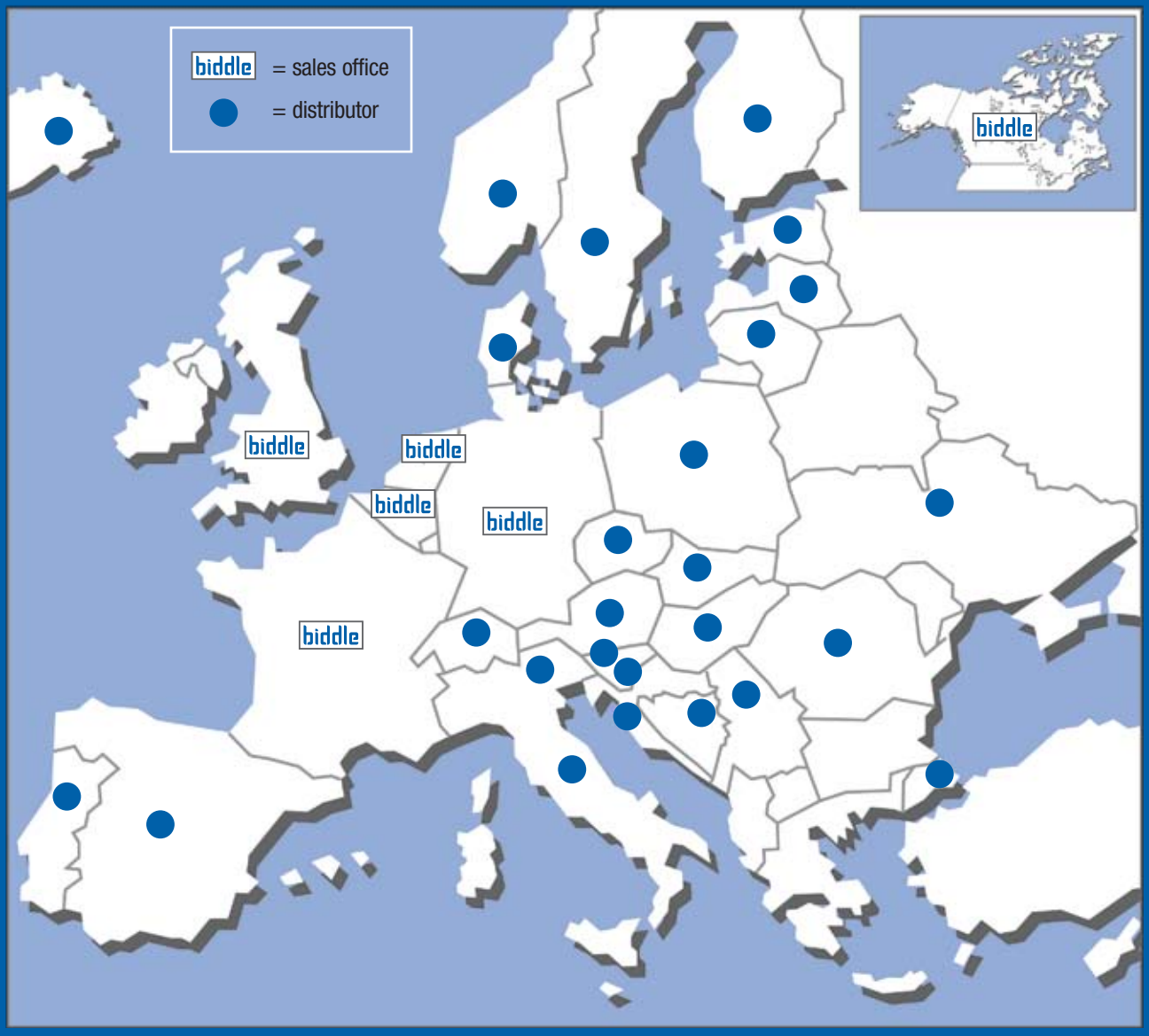
Biddle sales offices & distributors

Biddle has a strong focus on providing innovative climate solutions to their customers. In order to be able to offer optimum support worldwide, we work closely together with highly skilled local distributors in countries where there is no Biddle sales office. For a complete list of Biddle distributors you are invited to have a look at www.biddle.info.



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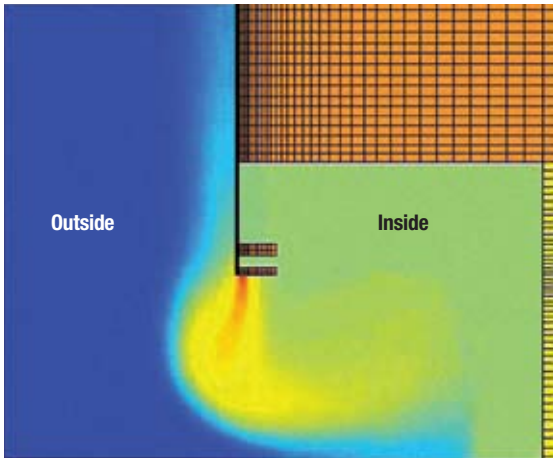
Biddle rectifier technology

All Biddle air curtains come with the patented rectifier technology.

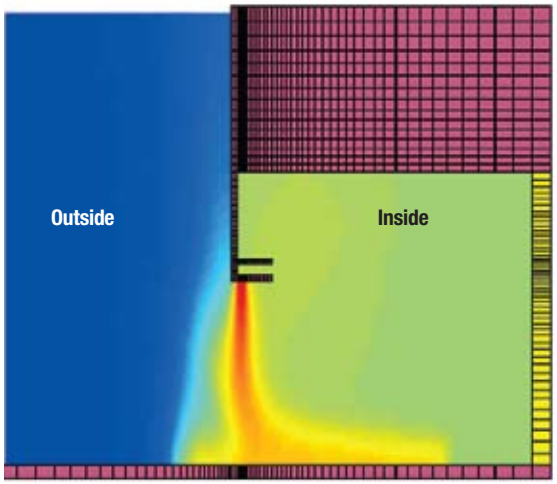
An air curtain without rectifier will not screen the complete opening. The discharged air fans out and does not reach the floor, causing turbulence in the air stream and allowing heat to flow out of the doorway. To reach the floor, the air curtain must discharge the air at a higher speed and, as a result, the unit produces considerable turbulence, higher noise levels and consumes more energy.

An air curtain must discharge air in such a way that no warm air (i.e. energy) will disappear to the outside. The air turbulences created by the fans is eliminated by the patented Biddle rectifier. The air is discharged in a laminar stream. Thanks to the optimum discharge pattern, a relatively low air velocity is needed to reach the floor. A Biddle air curtain does therefore not need to discharge air at high speed. As a result the air curtain produces a low sound level and one hardly feels the air stream. Any alternative without Biddle rectifier, using the same discharge velocity, does not screen off the entire door opening. The discharged air will fan out, failing to reach the floor, so the heat will escape to the outside. In attempt to reach the floor, the air curtain will have to discharge the air at a higher speed. Thus creating a high sound level and a high energy consumption and as a result, these air curtains are less efficient.

In case an air curtain with rectifier is used, the heat loss will be limited to the largest possible extent. Warm air will stay in and incoming cold air will be conditioned. Research by TNO (Dutch organization for Applied Scientific Research) has shown that a Biddle air curtain diminishes the outflow of air from the building. About 90% of its heating capacity comes to the benefit of the indoor climate. Thanks to this high efficiency, Biddle air curtains provide the best solution to save energy and to create / maintain the optimal inner climate.



Open door with air curtain without rectifier



Open door with Biddle air curtain and rectifier

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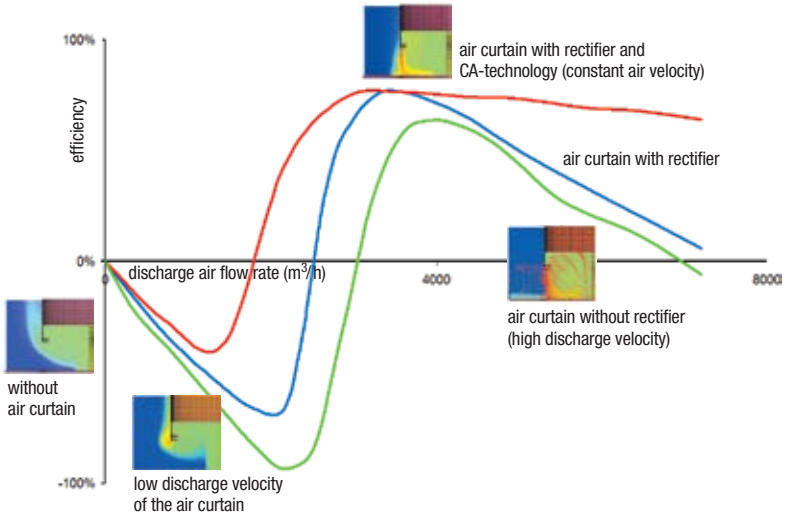
When the required heating capacity is high, for an air curtain without rectifier the discharge velocity will be increased. However, the increased discharge velocity also makes the air stream collide on the floor. The air stream will then be splitting into two parts. The part escaping to the outside area goes to waste, so there is more loss of heat. It shows that a high discharge velocity results in a low efficiency. Also, the turbulence of the air stream is causing a reduced efficiency.

A high heating capacity of the air curtain may also be realized by widening the discharge stream – at a higher air volume rate – by automatically turning a damper. This will increase the heat supply while the discharge velocity remains unchanged. The advantage of this solution: the air stream has less impact on the floor, so the supplied warm air will entirely be used for conditioning the incoming cold air. In the end the same purpose is achieved, but using less energy than conventional air curtains.

In addition to the rectifier technology, the Biddle air curtains also feature the innovative Constant Air velocity-technology (CA). The CA-principle consists of an ingenious valve system, which can expand the air discharge opening. Even when the air curtain is set at a higher fan speed, the air velocity will remain constant. As the valve opens up further, the discharge width increases allowing the wider air stream to produce more air volume at the same constant air velocity.

Discharge velocity & Efficiency



The benefits of the Biddle technologies include:

- **High efficiency**
  The efficient air stream results in little energy being lost. The efficiency of an air curtain is that part of the supplied energy that comes to the benefit of the indoor climate. Biddle air curtains have a theoretical efficiency of 94%. In practice, the efficiency may be lower, depending on conditions.

- **Comfortable air discharge velocity**
  The excellent penetration and the wider discharge opening allow the air discharge velocity to be kept low. People will hardly notice the air flow when passing through the doorway.

- **Better downward penetration**
  The wide air stream is discharged with little turbulence, in a straight, rectified lamina flow. Therefore, penetration is optimized with relatively little air needed to screen off all of the door opening.

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Comfort air curtain, model CA

Model CA is Biddle's flaghship; packed with the latest technology, strong performance in all situations, and low energy consumption, Biddle has developed a solution for difficult climate solution problems.
The CA-air curtain is highly suitable for situations where very high energy and comfort requirements are to be met. This air curtain offers maximum efficiency and high comfort thanks to two patented technologies.

Maximum efficiency and high comfort

The patented rectifier creates an optimal air stream pattern. Thanks to this a relatively little amount of air is required to reach the floor and the entrance is screened off properly. The air stream is hardly noticeable, which creates a high passage comfort. The air curtain minimises the outflow of conditioned air to the outside, so energy savings of 94% can be realised. This means 50% less loss of heat compared with air curtains with no Biddle rectifier. Besides, the air curtain heats up the incoming cold air that enters the building to ensure that this incoming air is not felt as draught. This results in a comfortable indoor climate.

For situations with varying weather circumstances, for example strong winds, Biddle has developed another patented technology; the 'Constant Air velocity technology'. This means that when a higher heating capacity is needed to warm up the incoming air, the discharge width increases but the discharge velocity remains unchanged. So even in very unfavourable situations, the CA-air curtain creates a comfortable indoor climate. In summertime Biddle air curtains can also be highly effective. The continuous recirculation of the indoor air caused by the combined action of the A/C equipment and the air curtain results in a comfortably cooled room.

Easy to use

The CA-air curtains are simplistic 'plug & play' type. The air curtain features the intelligent Biddle control system (consisting in an air– and waterside control system). This control system selects the optimum combination of comfort energy use. The supplied control panel gives clear information via the LCD display, such as ambient temperature, fault messages and a ' filter needs cleaning' indication. This control panel may be installed wherever you like.

Fits any interior

The attractive design makes the unit suitable for any interior. The unit is also easy to build in. By linking multiple air curtains next to one another, the CA-model can cover any door width, without interrupting the air stream. Besides, the unit is available in any colour.

Automatic regulation

Latest innovation in the CA range is a fully automatic regulation that adjusts the strength of the air curtain based on the weather circumstances. In this way an optimum indoor climate at the lowest energy costs is guaranteed.

Type	Door height	Door width	Heating battery	Models
CA S	200 - 240 CM	100 / 150 / 200 / 250 CM	Water Electrical	Free hanging (F) Cassette (R) Recessed (C)
CA M	220 - 280 CM			
CA L	250 - 330 CM			
CA XL	300 - 380 CM			

Biddle... because a happy customer is a returning customer!

Comfort air curtain, model CITY

The Comfort air curtain model CITY can be very well applied in stable conditions, such as shops in sheltered shopping streets.

Inviting and comfortable

The patented rectifier technology ensures that the passage comfort is high (low discharge speed) and the heat is well retained within the shop, resulting in maximum efficiency. Like all other Biddle air curtains model CITY guarantees an exceptionally high operating comfort in terms of energy use and noise levels. Easy installation and filter exchange are further characteristics of this comfort air curtain. Thanks to the high quality of used materials Biddle equipment guarantees an exceptional operating reliability and life span.

User-friendly

Model CITY features an electronic control, consisting of a touch pad control panel and an interface. The unit is very easy to control with the 3-speed control panel. The interface performs several control functions. Unsafe combinations between, for instance, the level of the speed and the position of the electric heating are corrected automatically.

Features

- Low sound level
- Electronic 3-speed control with touch pad controller
- Clever suspension system for fast mounting
- Easy to use and maintain
- Suitable, as standard, for low water temperature (60°C/40°C)
- Optional; constant outlet temperature control (2- or 3- way valve)

Fits any interior

Because of the austere and neutral design the CITY integrates well in all interiors. The unit is available in three capacities. The cassette and recessed units are discretely integrated into the ceiling. The unit comes as a standard in the following colours: a combination of white and grey (RAL 9010/RAL 9002) or aluminium (RAL 9006). Other RAL-colours are available at an extra charge.

Type	Door height	Door width	Heating battery	Models
CITY S	200 - 230 CM	100 / 150 / 200 / 250 CM	Water	Free hanging (F)
CITY M	230 - 250 CM		Electric	Cassette (R)
CITY L	250 - 300 CM		Ambient	Recessed(C)

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Comfort air curtain, model SF

Comfort air curtain model SF, has been designed as an all round air curtain, suitable for 'normal conditions'.

Patented rectifier technology

Like all other Biddle air curtains, model SF also comes with the patented rectifier technology. This ensures that the comfort is high (low air velocity) and that heated air stays in the building, resulting in maximum efficiency.

Electronic control

Depending on the situation the air curtain can be controlled in two ways: with a thermostatic controller or a three-speed switch. The air curtain comes standard with an interface and a thermostatic controller. The controller allows the user to switch the air curtain on and off and to control the strength of the air curtain. The controller also allows the user to enable or disable heating. It is also possible to deliver the air curtain without an integrated interface. In this case the air curtain is provided with a wall mounted mechanical control switch for the following functions: off-low-medium-high.

Features

- Compact and solid unit
- Easy installation and low maintenance
- For many applications
- Thermostatic room control
- Unheated air curtain possible
- Low sound level in lower strength

Fits any interior

The SF is suitable for doors of any width, but no higher than 3.0 m. The higher the capacity of an air curtain the higher the air curtain may be mounted.

The comfort air curtain is available in two capacities:
1. Standard Performance (SP) for door heights from 2.0 - 2.6 m
2. High Performance (HP) for door heights from 2.4 - 3.0 m

Standard colours are RAL 9010 or RAL 9006.
Other RAL colours are available at an extra charge.

Type	Door height	Door width	Heathing	Control
SFsSP	200 - 260 CM	100 / 150 / 200 CM	Water/ambient	3-speed switch
SFiSP			Water/electric/ambient	Interface and thermostatic controller
SFsHP	240 - 300 CM		Water/ambient	3-speed switch
SFiHP			Water/electric/ambient	Interface and thermostatic controller

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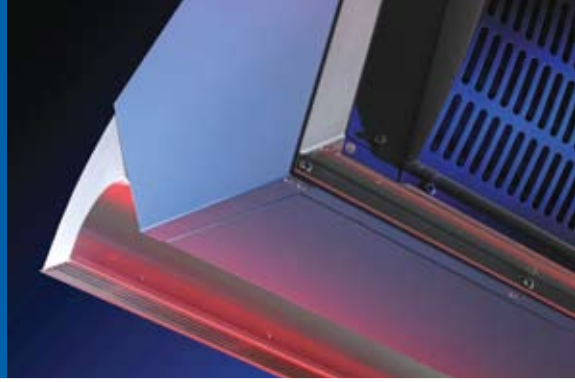
Industrial air curtain, model IndAC



In industrial premises, doors are often open for long periods during the loading and discharging of goods. In such situations, staff are bothered by cold draughts even when the installation of automatic doors has already taken place. For internal transport purposes it is also advisable to keep the access area free. However, open doors cause heat loss and can severely disrupt the internal climate of the building.

The Biddle industrial air curtain, model IndAC, is highly suitable to handle this kind of situations. For years, Biddle has been closely monitoring developments taking place within the industry. This, in combination with scientific research, forms the basis for the IndAC, which has a distinct robust and industrial appearance. The IndAC makes the entrance accessible for transport and prevents the different climates from intermixing, which results in free access, comfortable working conditions and less absence due to illness.

The IndAC, equipped with a unique double rectifier technology, a fully automatic regulation and an inside out design principle, is the most powerful and complete solution for factories wanting to improve logistics. The special patented shape of the IndAC gives it various benefits. Apart from its nice appearance, it results easy to install and clean, and the curved outlet grid allows to blow close to the door and thus to avoid air leakages.

Optimal comfort level

The discharge pattern of this unit is optimized by introducing a technological innovation - the patented Double rectifier. It provides for perfect climate separation and optimum heating of the cold outside air, making the building a comfortable place to be. The loss of heat is also minimized by the curved discharged ornament, which is positioned as closely as possible to the door. This makes that there are no air leakages on the sides and that the doorway is screened off well. Another advantage is the low sound level of the fan.

Various options

The IndAC works on three different energy types: hot water, electricity and soon even gas. It also works without heating, when the objective is to keep cool air inside. Three types of control are possible: “basic controller”, “plus controller” and “automatic controller”. By combining the various units, any desired discharge width from 3.0 m can be achieved in 0.5 m increments.

Type	Door height	Unit width	Coil type	Control	Installation position
Indac S	300 - 400 CM	150 / 200 CM	Water	Basic	Horizontal / vertical
Indac M	400 - 500 CM		Electrical	Plus	Right or left
Indac L	500 - 600 CM		Ambient	Automatic	Square or parallel to wall

Biddle…. because a pleasant working environment makes workers happy!

Industrial air curtain, model IF

The industrial air curtain model IF has been designed as an all round air curtain for more stable weather circumstances. Years of experience, supported by scientific research, are the basis for this solution.
As with all Biddle air curtains, model IF is provided with a patented rectifier. Thanks to this rectifier, less air is needed to cover the entrance and less energy is lost to the exterior

Benefits

- A comfortable working environment has a positive effect on the performance of staff, which can lead to a lower rate of absenteeism
- Energy savings; an air curtain keeps the warm air inside the building, so this air does not have to be heated up or cooled down continually, thus saving energy. The air curtain supplies part of the heat capacity that is needed for the room. This capacity can be deducted from the total climate control equipment required.
- Lower costs per m^2; an air curtain allows full use of the total floor area, so people can work closely to the door area in comfort.

Easy to install

Model IF air curtains can be installed above or at the side of the door. For climate reasons, Biddle recommends a vertical air stream, which means that the units should be installed above the door. The industrial air curtain comes, as standard, with a 1-row heating element. A five-speed-controller can regulate the motor speed. When a door contact switch is connected, the air curtain will only operate if the door is open. All switch control equipment is optional.

Various options

There are three models available; IF2, IF3 and IF4. Combining these different types allows any outlet length, in increments of 0.55 cm. The IF is also available as an ambient unit. The casing comes standard in blue (RAL 5023) and titane (Polydrox Titane).

Type	Length unit	Air displacement	Heating	Heating capacity
IF 2	111 CM	5175 m^3/h	Water	30.6
IF A-2			No battery	-
IF 3	166 CM	7775 m^3/h	Water	46.1
IF A-3			No battery	-
IF 4	220 CM	10350 m^3/h	Water	60.2
IF A-4			No battery	-

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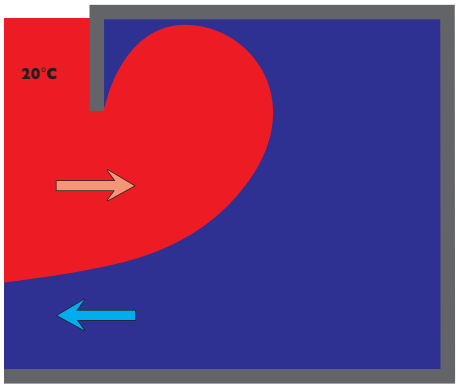
Chill room air curtain, model DAT

For the food industry or the pharmaceutical companies, maintaining the temperature of the products in chill rooms is crucial. Customers are more and more sensitive about quality and laws are becoming always more strict.

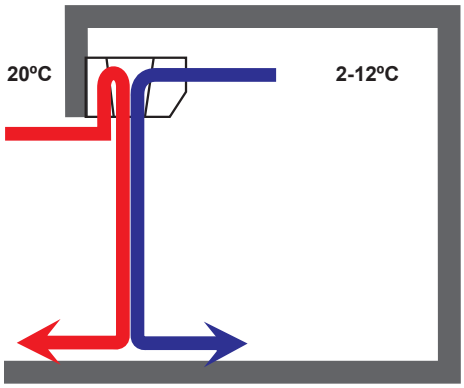
Yet, because of transit in and out of the room, the temperature is sometimes hardly kept at a constant level. Indeed, frequent openings of the doors cause energy losses and thus warming of the chill room. This is due to natural convection. This phenomenon is easily “broken” by an air curtain. But to blow air on the opening of the room create another negative phenomenon: the induction. This is due to the friction between the air stream and the ambient air volume.



Natural convection

Energy savings

To avoid this new phenomenon, Biddle developed a patented technology: The Double Air Stream. The DAT air curtain takes air in and out of the chill room, through two different inlet grids. Then it blows those two airs parallel, at the same speed, and through the patented Rectifier outlet grid. The result: no mixing of the air streams and so a very low level of turbulences and almost no induction.This technology allows to work permanently on open doors, minimizing the energy up to 94% according to tests made in independent laboratories.



Specifications

The DAT is installed indifferently inside or outside the chill room, above the door. Two sizes of units are available: 1 meter and 1.5 meter. The maximum size of a door to be equipped with the DAT is 3.00 meters of width and 3.00 meters of height. The DAT can equip all rooms with a temperature superior to 0°C.

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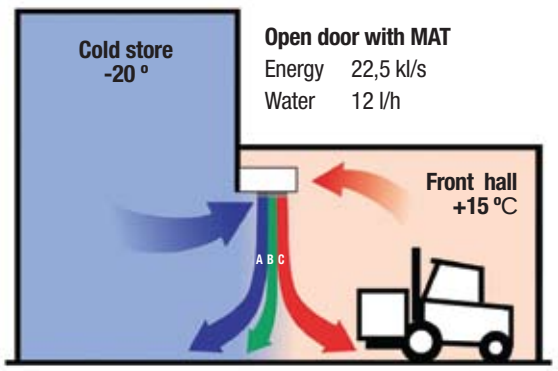
Cold store air curtain, model MAT

Cold stores suffer many problems due to the openings of their doors. Those openings, which cannot be avoided because of logistical needs, allow two air streams of different temperatures to meet; the one from the cold store and the one of the loading area.

The contact of those two ambiances creates a strong "natural convection". This phenomenon will:

- Create fog at the entrance of the store. Later this fog will turn into ice and snow in the cold store.
- Generate huge energy losses due to cold air going out of the cold room and warm air entering it.
- Cause a formation of ice on the ground.

All this will cost money to the company, damage the quality of the goods; affect the security of the worker, etc. After having studied these effects around doorways in cold stores, Biddle has developed a product that can solve aforementioned problems to provide an open and clear doorway for optimum use and efficiency of cold stores; the MAT air curtain.



With Biddle cold store air curtain

Multi Air stream-Technology

This special air curtain possesses various patents, including the "Multi Air stream Technology".
By producing three air streams, the cold store air curtain creates a screen between the cold store and the front hall. The air curtain draws in air from both the cold store and the front hall, discharging both cold and warm air into the doorway. These two air streams are used to "break" the free convection. As they are blown through the patented rectifier, they are not turbulent. Moreover, to avoid mixing between them, they are blown parallel and at the same speed.

Then a third air stream, made of air from the cold store relatively dried by the MAT, will be blown between the two other air streams to prevent the two ambiances to be in contact and to absorb humidity. The machine possesses an automatic regulation that adjusts in real time the heat and the level of drying of the air in accordance with the current needs. This system minimizes the operating costs of the MAT. Because less ice is deposited, maintenance on cold stores and cooling equipment is minimized as well. By applying the innovative MAT-technology you now have the opportunity to have an open and clear doorway to cold stores with minimum operating costs and maximum logistics efficiency. In some situations, a cold store air curtain will start to pay for itself within two years. Hygienic demands can be met easily while at the same time employees can work in a safe environment.

The MAT air curtain is available in three different sizes; 135 cm, 180 cm and 225 cm. For wider doors two units can be mounted together. For a good functioning of the units, an isolated corridor has to be created in front of the cold store door. The unit can be mounted by means of a set of threaded rods, supported by a mounting frame or directly connected to the ceiling. The units are made of stainless steel an together with the electronics, fans and heating their weight ranges from 400 - 700 kg each, which means that a solid construction is vital for good functioning of the units. Investing in a cold store is not straight forward - it begins with a comprehensive site inspection process and after the order, Biddle remains closely involved in the project.

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Cassette unit, model Comfort Circle

A comfortable room and climate are pleasant to work in and may also entice visitors to lengthen their stay. Biddle's Comfort Circle is the solution for whoever is looking for an attractive and space-saving solution for heating and/or cooling and ventilation from the ceiling. The Comfort Circle provides for comfortable heat during cold winter months and offers comfortable cooling during hot summer days.

Excellent air distribution

The Comfort Circle is based on a renewed discharge principle. The circular discharge pattern provides for excellent air distribution, with great downward penetration and great recirculation, even at low air velocities.

Applications

The Comfort Circle's stylish appearance and low noise level make this cassette unit highly suitable to be built into suspended ceilings of shops, supermarkets, public buildings and offices. The very small overall height of only 30 cm allows the unit to be mounted above the ceiling. The CC fits perfectly into a standard ceiling tile space, so that only the attractive discharge grille is within view.

Easy installation and little maintenance

Biddle cassette units can be mounted both before and after the installation of the tile ceiling. The adjustable suspension system allows the unit to be moved in all directions, and to position it exactly where you want. By using flexible ducts, you can determine the position of fresh-air inlet connections yourself. All units are delivered ready for operation.

Various options

The Comfort Circle is available in two different types: CC 60 and the CC 90. One CC 60 can heat and/or cool an area of +/-100m², while the CC 90 can handle an area of +/- 200 m². The unit is suitable for ceiling height of 2.0 to 3.5 m. The following models are available: heating, cooling, heating/cooling combination and heating/ventilation combination. The unit comes standard in color white (RAL 9010), but other RAL colours are available at an extra charge.

Type	Size	Area
CC 60	60 x 60 CM	100 m²
CC 90	90 x 90 CM	200 m²

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Air heater, model NOZ

New industrial buildings are built to higher standards with better insulation, reducing the need for heat. Yet, sufficient distribution of any heated air remains necessary to 'serve' large spaces properly. Air heaters are fit for heating and/or ventilation large-space industrial and commercial buildings. The Biddle air heater, model NOZ, can be applied in rooms of 4 to 16 metres high. The fast and even distribution of heat makes this ceiling model fit for use in, for instance, DIY markets, factory buildings, distribution centres and warehouses. If there is a need for fresh air in a room, the air heater may also be used for ventilation purposes.

Highest comfort

The Biddle air heater discharges heated air at high velocity through adjustable nozzles. As a result, the air stream pulls the surrounding still air along, ensuring good mixing (induction) and circulation. This benefits the vertical temperature gradient and results in good circulation and even temperature distribution throughout the space. The adjustable nozzles ensure that the area of influence is considerably enlarged, with unchanged heating capacity.

Energy savings

As the area of influence of this air heater is relatively large, fewer units will be capable of heating a large space. Savings can be realized on the reduced number of units and on installation costs, as well as on energy costs.

Various options

The air heater is available in two types: the NOZ 25 and the NOZ 50. The unit comes, as a standard, with a 2-row heating battery that is suitable for water temperatures of 90°C/70°C. At lower water temperatures or in situations where more heating capacity is needed, a 3-row heating battery is available The casing and guard grille come, as a standard, in the colour RAL 9018 (light grey), the inspection panel and the plastic rings in RAL 5010 (blue). Other RAL colours are available at an extra charge.

Type	Heating battery	Supply voltage	Influence area	Mounting height
NOZ 25	W2 = 2-row battery W3 = 3-row battery	E (230 V, AC, 50 Hz) D (400 V, AC, 50 Hz)	400 - 100 m^2	2.8 - 8.5 m
NOZ 50	W2 = 2-row battery W3 = 3-row battery	D (400 V, AC, 50 Hz)	800 - 200 m^2	3.5 - 14 m

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Biddle, your partner in climate solutions

References:

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- Carrefour
- C&A
- Coop
- E. Leclerc
- ENKA
- Esprit
- Frico Cheese
- Fortis bank
- Free record shop
- Galliker Logistics
- GAZPROM
- Geant
- Heineken
- Heiploeg
- H&M
- Ikea
- ING Bank
- Interspar
- Intertoys
- Lekkerland
- McCain
- Merkur
- Mercator
- Philips
- Port of Rotterdam
- Sinnack
- Stockmann
- Tengizchevroil
- Zara
- And many others.....

Liberty Corner

Foajé BK

Stockmann

Arcade

Rabobank

biddle
CLIMATE SOLUTIONS

This certification warrants quality awareness in phases of design and production, management and customer satisfaction. This certificate guarantees the equipment has been manufactured in line with the highest standards.

This certification is the international standard in the field of the environment, and is your guarantee that Biddle has a properly functioning environmental management system in place.

Biddle maintains the highest standards for product safety and complies with the CE directives for its entire product range.

Various Biddle technologies have been patented:
- Rectifier technology
- Double Rectifier technology
- Constant Air velocity technology
- Multi Air Stream-Technology
- Circular discharge technology
- Ventilation module

All Biddle products come with their own documentation, which is available on request.

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